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AUTHOR	Wang, C. Y. Janey
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ABSTRACT

In the online learning environment, communication and collaboration occur from a distance. In the absence of non-verbal communication cues (such as facial expressions, gestures, and tone of voice), understanding, communication, and interaction rest largely on individual assumptions and interpretations. The magnitude of these communication challenges increases as cultural differences among communicators widen. The purposes of this study are to: (1) discuss the role of effective intercultural communication and collaboration in the Web-based collaborative learning community; (2) examine helpful strategies utilized by both instructors and learners in a Web-based curriculum model where diversity is treated as a fact and collaboration among learners of diverse backgrounds as the norm; and (3) discuss future implications for integrating technology into curriculum targeted to global learning populations. (Contains 28 references.) (Author/AEF)

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By: C.Y. Janey Wang

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Handshakes in Cyberspace: Bridging the Cultural Differences Through Effective Intercultural Communication and Collaboration

C. Y. Janey Wang
The University of Texas at Austin

Abstract

In the online learning environment, communication and collaboration occur from a distance. In the absence of non-verbal communication cues (such as facial expressions, gestures, and tone of voice), understanding, communication, and interaction rest largely on individual assumptions and interpretations. The magnitude of these communication challenges increases as cultural differences among communicators widen.

The purposes of this study are to (1) discuss the role of effective intercultural communication and collaboration in the Web-based collaborative learning community, (2) examine helpful strategies utilized by both instructors and learners in a Web-based curriculum model where diversity is treated as a fact and collaboration among learners of diverse backgrounds as the norm, and (3) discuss future implications for integrating technology into curriculum targeted to global learning populations.

Introduction

The Internet has provided the possibility to erase geographic and interpersonal boundaries among people of diverse backgrounds, has created opportunities for widespread electronic delivery of news, information, and curriculum, and has altered the way we communicate, share knowledge, deliver education, and conduct business. Globally, market expansion and course offerings are increasingly assisted by use of the Internet. In education, the Internet has been widely used in preparing learners for "future responsibilities" and "success in life" (Dewey, 1938, p. 17). Cross-nation collaborative projects on the Internet across disciplines have exponentially increased internationally in recent years.

Amidst the hype of cutting-edge technology, however, it is often overlooked that computers do not think, only humans do; computers do not have agency, humans do; technological difficulties do not limit intellectual advancement, humans do. Technology potentially provides an array of resources, but also presents constraints. Indeed, humans ultimately decide how to utilize new technologies, and these decisions are often based on both proven (or unproven) and discovered strategies. To integrate technology into instruction and learning, it is essential to focus on human needs, strategies, perceptions, and experiences communicating and collaborating in the cyber-learning environment — rather than solely on the functionality of technological tools.

As Web-based learning communities and online school partnership projects exponentially expand globally, effective intercultural communication and collaboration is, as never before, of vital significance. Web-based instruction provides opportunities for a diverse body of individuals to interact. In order to suit individual learner's needs while optimizing their strengths and talents, Confucius said, instruction should be tailored to meet individual learner's needs. While instructors are challenged to understand and be sensitive to the needs of learners in their design and implementation of Web-based courses, learners' success hinges not only on their willingness, attitude, and devotion to achieve shared goals in a sea of information, but also on how they handle the challenges of consolidating fellow learning community members' multiple views, perspectives, and approaches.

Based on my Web-based collaborative learning curriculum model experiences as a student, researcher, moderator, instructional designer, and teaching assistant, this paper intends to explore how effective communication and collaboration among members of diverse backgrounds may be encouraged in the design and implementation process and to explore what intercultural communication techniques may be or have been utilized by members in the Web-based learning community in bridging differences, achieving group goals, and optimizing individual learning.

Web-Based Instruction: Opportunities and Challenges

The development of computer network technology provides opportunities for dynamic human contact and collaboration. Teachers at all instructional levels are learning and integrating technology into curriculum and instruction. Internet access in public schools and instructional sites in America has increased from 35 percent in 1994 to 89 percent in 1998 and is expected to grow further. Student computer use has also increased from 27.3 percent in 1984 to 68.8 percent in 1997. These changes represent increases of 10.3 percent at the Pre-K level, 10.4 percent in grades 1-8, 12.3 percent in grades 9-12, 9.5 percent at the college level, and 3.4 percent at the graduate

school level (U.S. Department of Commerce, 1998). Major reasons for this rapid growth include technology's capacity for reaching remote locations while providing immediate and engaging communication, its promise of collaborative opportunities, and the human need for connection and interaction.

The Internet is a global society involving users of diverse backgrounds, and this global society is comprised of various communities with cultures of their own. This Internet society is constantly evolving due to the evolution of tools and stakeholders involved. In this society where people communicate to collaborate the methods of communication and collaboration evolve with the evolution of technological tools and the dynamics of human interactions.

Web-based instruction has often been implemented to supplement, enhance, and transform existing curriculum. Some instructors use the Web to post syllabus online, to supplement face-to-face class teaching, to broaden the scope of their instruction, or to deliver courses in their entirety. Many distance-learning courses, however, have encountered high attrition rates (Abdul-Rahman, 1994; Galusha, 1997), unequal participation and individual commitment, role ambiguity in group contexts, absenteeism, inattention to social relationships, and students feeling overwhelmed (O'Hara-Devereaux&Johnasen, 1994). The viability of effective communication and collaboration in the absence of face-to-face interaction has been questioned (Handy, 1995). When students find course content irrelevant, perceive the environment as impersonal, can not obtain immediate technical or instructional assistance or timely instructor feedback, and feel disconnected from fellow learners, they may feel isolated, unmotivated, or unchallenged. These shortcomings originate from a lack of understanding and sensitivity to the dynamics of human interaction and the nature of human learning.

In the following section, I will first explore topics related to community-building, cooperative and collaborative learning, culture and communication, and intercultural communication as they relate to the curriculum model examined and the purpose of this study. Then, I will examine a Web-based curriculum model based on my two years experience as student, researcher, moderator, instructional designer, and teaching assistant within this model. Finally, I will discuss implications for future global Web-based learning curriculum.

Community Building & Web-Based Learning

Despite Thoreau's fervent wish for solitude while at Walden Pond (Thoreau, 1996), the effects of isolation are so powerful that isolation is a potent punishment technique. Parents and teachers isolate misbehaving children. Hostages are held in isolation, as are miscreant prisoners. Most of us cannot tolerate enclosure without contact for very long; we crave company to belong to and share with, and love is as necessary as the air we breathe. Similarly, contact is often necessary to accomplish our goals; communication is essential to our pursuit of achievement as social beings.

In "My Pedagogic Creed" (1929), Dewey said, "The educational process has two sides, one psychological and one sociological." Dewey emphasized the social aspect of learning. Dewey thought some schools failed because they neglected "the school as a form of community life." Educators are aware of and have been utilizing the power of people working together to build a "community of learners." Increasingly, this notion has been re-emphasized with the advance in technology and global network. "The community is something that happens. It happens when people speak to one another and listen to one another in an effort to discern the truth and to discover themselves in the process. It happens only in an environment of freedom and openness. Community happens only in an atmosphere of honesty and tolerance. Community happens when people care about one another and when they are willing to take responsibility for themselves as well as for each other," said Robert Berdahl, the chancellor of the University of California at Berkeley (Berdahl, 1998). It can be inferred from Berdahl's commentary that communication and collaboration are essential for community building.

Communities are essential in human history. We have constantly sought to survive collectively, to belong, to care, and to support each other. Various forms of communication and culture are often established in the community to maintain cooperation and collaboration. Maurice Friedman (1983) distinguished two kinds of community: a community of affinity, which refers to a group of "like-minded" people who have come together for security, and a community of otherness, which refers to when members of the group are not alike, but when they share common concerns. Within a particular virtual community (a form of network organization through the use of technological tools), people share "common concerns." They are not necessarily "like-minded" and while the same beliefs and values may not be commonly shared, certain visions, concerns, or goals are shared (Friedman, 1983).

Many educators believe that learning is more effective when collaborating students encounter conflicts (Piaget, 1977; Doise & Mugny, 1984; Savery & Duffy, 1996). According to these educators, educational, social, and cultural background differences are not necessarily negative, but rather, through interactions among different

people new thoughts and critical thinking and analysis are inspired and opportunities for individuals to gain insights are provided.

The richness of multiple perspectives in the Web-based learning environment, if fully nurtured, can help spur the formation of rich and innovative perspectives. Conflicts are positive when collaborators communicate and negotiate to reach a shared understanding, discover new paths, and construct new thoughts and ideas together. Sharing, exchanging, and negotiating provide learners opportunities to deepen their understanding. During the process of communication and collaboration in knowledge acquisition, negotiation, decision-making, and knowledge construction, learners hopefully slough off their unconscious reliance on preconceptions, biases, unproven interpretations, and assumptions.

Cooperative and Collaborative Learning

According to the 1999 U.S. Department of Commerce report, "21st Century Skills for 21st Century Jobs," the proportion of skilled in the workforce increased from 20 percent in 1950 to 60 percent in 1997 while the proportion non-skilled laborers in the workforce decreased from 60 percent to 20 percent illustrating that the demand for skilled workers has dramatically increased over the past half century while the demand for unskilled laborers has dramatically decreased. In this new economy, Fortune 500 companies regard "teamwork," as the most critical job in the 21st century skill. Concomitantly, the ability to cooperate, collaborate and work well with others is considered more important than basic skills (such as reading and writing) that traditional schools have long defined as being most important (21st Century Skills, 1999, p. 1).

Studies consistently indicate that cooperative and collaborative learning are not only effective in generating positive outcomes in academic performance, but are also influential in affective and social aspects of learning (Johnson, Johnson, & Smith, 1998; Slavin, 1991, Harasim, 1990). "When the classroom is structured in a way that allows students to work cooperatively on learning tasks, students benefit academically as well as socially," Slavin (1987) said in extolling the benefits of cooperative and collaborative learning.

Cooperation creates possibilities. As Fosnot, (1996) said, "As ideas are shared within a community, new possibilities are suggested to the individual for consideration. These multiple perspectives may offer a new set of correspondences, and at times even contradictions, to individual constructions." (Fosnot, 1996, p. 27) Johnson and Johnson (1990) concluded that, "Achievement is higher in cooperative situations than in competitive or individualistic ones and cooperative efforts result in more frequent use of higher-level reasoning strategies, more frequent process gain, and higher performance on subsequent tests taken individually (group-to-individual transfer) than do competitive or individualistic efforts" (Johnson & Johnson, 1991).

"Groups pull and tug. They pull between tasks to accomplish and work to produce, but they also tug to maintain cohesiveness and an optimal level of morale." (Schmuck & Schmuck, 1997, p. 263) Working in a group can be irritating and frustrating. While differences in knowledge and skills may influence overall results, major challenges and problems to cooperation and collaboration come from differences in attitudes and in individuals' willingness to communicate, negotiate, change, commit, and take responsibility — rather than superficial differences in gender, ethnicity, race, class, religion, or culture.

Culture and Communication

Mirroring the American community, public school students represent an array of cultural backgrounds. Globalization has widened the need for intercultural communication and collaboration. Dodd & Montalvo (1987) identified intercultural effectiveness as a desirable skill essential in creating a productive and non-threatening communication climate marked by non-dogmatic openness and innovation. Researchers have noted the limitations of and misunderstandings in cross-cultural dialogue, the importance of cross-cultural learning, and the necessity of being culturally sensitive and responsive (McLoughlin, 1999).

With ample knowledge and strategies, technological tools are the means rather than ends to goals we want to achieve. Given the importance of global communication and collaboration, it is essential to assess what we can do to bridge the differences among members in the community and to establish culturally sensitive curriculum suitable for learners of diverse backgrounds.

Culture and communication are intertwined and interdependent. Culture influences the way we make meaning, interpret, and communicate messages. Culture is complex and involves a plethora of systems. As described by Carley H. Dodd, "Culture is like a kaleidoscope with similar shapes but different colors, or at other times, with different shapes but similar colors" (Dodd, 1991, p. 12). Culture is often described as the dynamic interplay between the experiences of people and the social structure at large (Giroux, 1997; Collier, 1998; Grossberg

1992; Grossberg, 1997; Marcus and Shannon, 1997). Culture is the societal situation strained through the mesh of individual perception. This dichotomy is almost paradoxical in that culture is, in some ways, unique to the individual yet shared by a community. One's identification with a culture comes from the "sameness" that is shared with others.

Cultural differences, as referred to in this paper, are not limited merely to differences in ethnicity or nationality. Cultural differences indicate "patterns of thinking, feeling, and acting." (Hofstede, 1997, p. 5) A group holding the same "shared constructions" (Erlandson, et.al.,1993, p. 24) represents a culture of its own. Those unfamiliar with the online learning "culture" may easily get lost in the cyber environment and feel isolated. Those ignorant of their own and other's culture may feel isolated within a collaboration environment. Those unwilling to be open to and respectful of multiple perspectives, accepting of ambiguities or uncertainties, flexible, and sensitive and mindful of cultural communication differences may encounter difficulties in the collaborative learning environment.

Collier (1998) characterized cultural identities as historical, contextual, and relational constructions that have "enduring" and "changing" properties. Cultural identities emerge in everyday discourse and in social practices, as well as by rituals, norms, and myths that are handed down to new members (Collier 1998). Because of mobility, greater accessibility of information, and expanded multi-group membership, the stereotypical generalizations has become increasingly invalid. Most people belong to multiple groups (both voluntary and not). Dodd suggests that the "macrocultural system" needs to be considered as well as the "subcultural differences" (Dodd 1991) when we look at individuals interacting in a cultural context. While the society in which an individual is situated largely influences one's "macrocultural" perspective, the individual nature of culture lies in the uniqueness of the "subcultures" to which one belongs.

In the online learning environment, knowledge acquisition and group collaboration differ from personal encounters. In this environment, learners map their way through the process as they communicate from remote sites. When nonverbal communication cues such as facial expressions, gestures, and tone of voice are largely absent, the frequency of communication and the reliance on interpretation increases. Effective communication and collaboration in the cyberspace requires patience and tolerance as members work to understand one another in accomplishing group and individual goals. Gudykunst (1994), in describing effective in-group communication, said, "When there is a lack of connection between the participants, community cannot develop. For community to develop, dialogue is necessary. Dialogue involves communication between individuals. In a dialogue, each participant's feeling of control and ownership is minimized; each participant confirms the other, even when conflict occurs" (p. 223). Interpersonal relationships are essential for effective communication among members of the group. D.W. Johnson & R.T. Johnson (1975) suggested a few interpersonal processes and patterns of interaction within the structure of a cooperative learning environment: mutual liking; effective communication; utilization of fellow students as resources, division of labor, and divergent and risk-taking thinking. They also added that high interactions, trust, mutual influence, acceptance and support, emotional involvement, and coordination of effort are also essential.

Collis (1999) proposed that cultural sensitivity should be a cornerstone in the design of Web-based courses because culture influences the acceptance, use, and impact of learning resources. Culture affects the individual's response to computer-related system (Collis 1999). Among Collis' suggestions, I find the following points important in designing a culturally sensitive course: (1) creating an atmosphere of non-critical acceptance of ideas; (2) moving from deficit-model thinking where the students begin with a deficiency in terms of a lack of pre-defined knowledge to a socially participative model where the students learn through communicative interaction with others that includes horizontal communication among students as well as vertical communication among the facilitators and students; (3) accepting tone and style differences in communication; (4) grouping of users to facilitate competence and comfort; (5) appropriately allocating responsibilities among students and facilitators; (6) accepting results of trial and error in course design; and (7) discarding the idea that learning or acting differently is unacceptable. Collis (1999) concludes that institutions and instructors will not only need to improve their insight into cultural differences that affect teaching and learning, but will also need to form these insights into manageable ways to respond to multiple cultures.

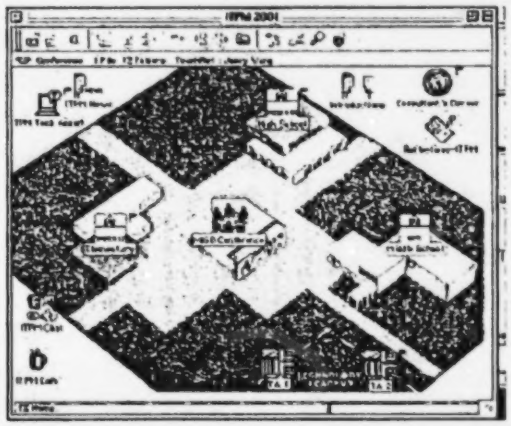
Bridging the Differences: A Web-Based Curriculum Model

This paper examined a Web-based Computer Supported Collaborative Learning (CSCL) curriculum model at the University of Texas at Austin. This model treats diversity as a fact and collaboration as fundamental for knowledge construction through the provision of rich information and resources to learners. In this model, multiple perspectives are valued. Students engaged in activities where knowledge is constructed through negotiation among

collaborators from diverse backgrounds within the community. Group diversity is also carefully considered in forming collaborative virtual teams. Students were first asked to indicate their preferences based on their interests. Factors such as ethnicity, gender, computer skills, and geographic locations were then considered in building virtual teams.

This curriculum model, initiated by Dr. Paul E. Resta at the University of Texas at Austin, invited a group of graduate students from diverse backgrounds with various strengths and talents to participate in the course design, development, implementation, evaluation, and revision processes. Reflecting the diverse student body – and the collaborative nature of the course – these graduate students from diverse cultural backgrounds and expertise collaborate to design and improve the course throughout the curriculum development and implementation process. The course is based on an on-going revision process where researchers meet on a regular basis to share observations in order to improve the course.

Graph #1



Graph #2

Courses in this model are situated in the virtual environment where students "meet" through online communication and interaction. A virtual environment with collaborative tasks was created based on the metaphor of a hypothetical technology company, school district, or educational technology institute (See *Graph #1* for example of virtual workspace). Students are divided into groups representing a department within a company, a school within the district, or an educational sector within an institute. Problem- and project-based approaches to learning were employed. In these courses, students must collaboratively complete a technology plan, write a grant proposal, or design a CSCL course based on many structured tasks. To accomplish course requirements, online socialization and communication are essential, as are extensive cooperation and collaboration, among learners of diverse backgrounds.

Many online tools are provided to students to support the development of their projects. The course content with rich information and resource links is provided on the Web via a courseware (WebCT, Vcampus, or Prometheus), while class discussions and interactions take place at a virtual platform on TeachNet via FirstClass groupware. For synchronous interaction, the online chat function is employed. Learners participate in monthly Webcast (videoconference) on campus (face-to-face) or by way of network accessing (see *Graph #2* for example), which serve as a monthly forum for guest experts' discussion of relevant topics, teams to share their work, and the instructor to answer student questions or give advice. Courses are divided into modules; module tasks progress from simple to complex. Learners are either on-campus students at the University of Texas at Austin or distance-learning students from across Texas and the United States. On-campus students have the option of meeting the instructor, staff, and peers face-to-face or through the Internet, while off-campus students can interact only via the network and phone communication.

Communication: Challenges and Strategies Employed

Communication in the Web-based collaborative learning environment includes both task and social aspects. Due to communication limitations, online collaborators easily spend a large portion of time understanding, checking,

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confirming, coordinating, and negotiating to obtain mutual understandings and to construct shared knowledge. With the limitations in Web-based communication tools and the resultant reliance on interpretations and assumptions, effective communication among learners of diverse backgrounds is very challenging. A few examples of Web design that may be open to cultural interpretation include: various expectations for communication (some learners may expect daily communication from others in the team while others are not accustomed to communicating online), the amount and type of information desired and required (some learners may expect explicit information while others who are accustomed to implicit expression do not feel comfortable being direct), communication styles and preferences (some prefer to take turns, some like to jump to conclusions, while others like to wait for cues), level of task orientation (some are task-driven high achievers while others take a laid-back position), variation in understandings (some are from the culture where the course is situated while others may situate in a completely different culture), group orientations (some prefer and have experience working in groups while others prefer competition rather than collaboration), and group dynamics (some cultures may look to a leader for direction while others work better when there is no single leader in the group).

As opposed to face-to-face settings where communicators are recognized as human, in the Web environment, people are often objectified and largely recognized by name. As opposed to face-to-face settings that are conducted naturally, in the Web environment, there is usually a 45 seconds time lag between event and broadcast. As opposed to face-to-face settings where it is possible to drag a person aside and whisper in privacy, in online chat, this is not possible because everyone shares the same space. As opposed to face-to-face settings where communicators can choose their focus of attention (or inattention), in the video-conferencing environment, the camera setting dictates viewers' attention.

In my previous study entitled, "Multiplicity and flexibility as design features – A case study of a Web-based collaborative learning community for diverse learners" (to be published in the Computer Supported Collaborative Learning 2002 conference proceeding), I identify multiplicity and flexibility as two key course design features essential for meeting the needs of students from diverse backgrounds. As a teaching assistant, I worked closely with the instructor and learners and observed the course while assisting in its implementation. A few course aspects were highlighted to illustrate multiplicity and flexibility: course content and structure; communication tools, channels, and types; support, accessibility, and feedback; and performance assessment. Multiplicity refers to the multiple ways of presenting and delivering course material, channels of communication, activity offerings, and learning strategies. Flexibility refers to the welcoming of and openness to questions and suggestions, timely support, options for learning tasks, and provision of individualized feedback throughout the course.

The provision of multiple learning options is critical to enable deeper understandings among students from various cultural and social backgrounds who hold widely divergent individual values and interests. Multiple course representation methods were employed to meet the needs of multiple users. These representations included text, audio, video, and simulation, as well as multiple learning contexts and strategies. This curriculum model provided options in some assignments. For example, in one of the classes offered, students had the options of type of medium and their focus in an assignment regarding leadership visions. Some students chose film, others chose print, while others drew from their own experiences. A Korean student chose to write about her president while another Caucasian student chose a female leader because she said that female leaders have been largely unheralded. The provision of options gave students of diverse cultures, needs, and values the opportunity to situate their learning in the context of their culture or values in order to achieve deeper understandings. As no plan is perfect, adjustments to the course content and schedule were necessary throughout the implementation process. Reflecting the flexibility of this course to meet the needs of diverse learners, approaches, methods, and schedules were adjusted and alternatives provided when technological failures or technical setbacks occurred or to accommodate learners' unforeseen personal problems and difficulties.

In the required end-of-module learning reflections, learners in this curriculum model indicated a few effective strategies for online collaboration within this model. These strategies include: ensuring the technical aspects (such as necessary software downloads) are solved upon initial entry; employing frequent and cumulative check-ins to ensure optimal participation; ensuring adequate time for ice-breaking and team-building to facilitate team coherence and success; providing positive, constructive feedback and encouragement to peers; establishing multiple leadership roles; and setting meeting agendas for effective decision-making and collaboration. Students also indicated that equally essential strategies essential for online collaborative success were taking initiatives on tasks, honestly and sincerely communicating needs and intentions, and encouraging risk-taking by celebrating multiple perspectives. A few learners indicated that language is often the major challenge for students whose native language is not English because culturally related idioms and slang used. These non-native English-speaking students suggested that language deficiency is an invalid basis for judging other because an individual's talents are simply masked by language deficiencies. Indeed, many non-native English-speaking students reported gaining

confidence in their communication abilities as the course progressed, illustrating the positive effect of collaboration in bringing out the multiple talents of diverse learners. Many students suggested that it is important to be sensitive to other's needs, encourage participation, and to provide positive feedback. Learners further suggested that regular contributions from all group members is essential to members' feelings of connection and sense of community, as well as to the completion of tasks.

Conclusion

In light of the global community spawned by the World-Wide-Web and the increased preponderance of global Web-based learning communities through cyber instruction, this paper discusses why culture and communication are important considerations when designing and implementing Web-based collaborative learning communities. Based on a Web-based CSCL curriculum model, this paper discusses some strategies employed by the instructor and instructional designers to enhance the design and implementation of the course to optimize individual and group learning among learners of diverse backgrounds; to facilitate class communication as well as by learners of the community to better collaborating with peers with various patterns of thinking, frames of mind, and school of thoughts.

Communication among people of congruent cultures, societies, and backgrounds – or even from the same family – is challenging. Communication among people of different cultures, societies, and backgrounds is even more challenging. Collaborative communication across cultures in the online learning environment requires the willingness of community members to listen, to respect, and to accept different perspectives; to accommodate and negotiate in order to reach shared meanings; to be flexible in their acceptance of ambiguities; to provide mutual respect, trust, and support; to develop cultural sensitivity and to understand the value of multiple perspectives; to negotiate shared meanings; to obtain mutual understanding, and to reach consensus for the achievement of the shared goals and needs.

Given the diversity of the global Internet society, cultural sensitivity and flexibility are essential to collaborative virtual classroom success. Future studies should focus on the needs of learners from diverse cultures in the design and implementation of virtual curriculum and in virtual classroom intercultural communication and collaboration. Web-based instructional designers, instructors, and moderators should employ multiple approaches and strategies in designing, developing, and implementing their courses and in assessing students – while always keeping in mind the needs of learners from diverse backgrounds – to inspire and encourage constructive work. Cultural sensitivity may assist in bridging the cultural diversities and contributing to overall course success. Building global communities of diverse learners requires that courses not simply represent an autocratic instructor's curriculum in the absence of consideration of multiple needs and resources; the ideal curriculumshould consider multiple perspectives, provide multiple communication and learning styles, and allow a high level of flexibility.

As the Chinese philosopher and educator Confucius said, "Education should be provided indiscriminately. Teaching should be tailored discriminately." This implies the duel notions of equal opportunity among learners under instruction tailored to the needs of individual students. For optimum learning to occur, instructors should be cognizant of cultural differences, but also should also cognizant of the challenges to intercultural communication and the need to be sensitive to the diverse needs of learners during the process of instruction. For optimum learning to occur, experienced experts' strategies of tailoring instructions to learners' needs and facilitation of group interaction need to be shared.

Web-based instructors of diverse student bodies face the same challenge as Chinese cooks – it's all in the mix. Just as Chinese cooks need to know the functions of various ingredients, instructors need to know the strengths and weaknesses of various learners. Just as Chinese cooks need to know the combined effect of various components, instructors need to know how to maximize the divergent abilities of learners. Just as Chinese cooks need to temper the use of spices, temperature, and cooking time, instructors need to temper the pace and demands of instructional strategies. Without these sensitivities, optimal performance cannot be attained.

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